
Section Seven: Clean/Sterile Storage

🕒 Estimated
Contact
Time:
45 minutes

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This module is designed to:

...help you understand the requirements for clean and sterile storage. It explains what clean/sterile storage is and how to maintain it; details the proper way to handle, store, and deliver medical supplies in order to keep clean items clean and sterile items sterile; and describes storage options for different types of supplies.

Following instruction, you should be able to perform the following:

- Identify the requirements for clean/sterile storage.
- Demonstrate proper material handling procedures.
- Select appropriate storage.

What is Clean/Sterile Storage?

Medical supplies and patient care equipment must be available at a moments notice to enable a hospital to provide quality care to its veterans. This requires that an area be designated as a “sterile storage” area, where sterile supplies and instrument sets can be made available while protecting them from accidental contamination.



SPD is responsible for storing and maintaining clean and sterile supplies throughout the medical center. This includes the case cart area and clean/sterile storage in SPD, and the supply closets, which are located on the wards. Most supplies are kept in the designated clean/sterile storage area within SPD. New supplies are received into the “breakout” area, where they are removed from their cardboard boxes or shipping containers and sorted and logged into the inventory system.



Ward closets or “secondaries” are storage areas where frequently used supplies are kept so that they are easily accessible for use by the medical personnel on the ward. They contain items like steri-strips, gauze, bedpans, and blood pressure monitors. SPD maintains the inventory based on an order and schedule that is coordinated with the unit.

The case cart area is a special part of the clean/sterile storage area where supplies for specific procedures are stored. The carts and containers, as well as the supplies, must be protected from contamination because they often are used in aseptic environments like operating rooms.



Maintaining Clean/Sterile Conditions

Once items have been sterilized and received in the distribution area of SPD, it is essential that each SPD technician do everything possible to protect and preserve the cleanliness and sterility of those items. Certain restrictive techniques and procedures have been established to help ensure that both sterile and nonsterile supplies are kept under the best possible storage conditions for the safety and protection of both patients and employees.

Restrictions

Once items are received in the distribution area of SPD, it is essential that they be protected until they are needed for use.

Certain restrictive guidelines have been established to help ensure that both sterile and clean supplies are kept under the best possible storage conditions for the safety and protection of both patients and employees.

The following activities are not permitted in SPD:

- use of tobacco products
- applying cosmetics
- eating
- drinking
- storing food items (including beverages)

Such items can spoil and draw flies or vermin, leading to the contamination of medical supplies.

Portable fans are also not allowed in any area of SPD. The wind produced may force microorganisms into the sterile packs through minute holes and folds in the packaging material. Portable fans can also interrupt the proper air flow in SPD, forcing “dirty” air into a “clean” room.

Reporting Variations

The SPD area must be kept free of insects, rodents, and other vermin. Any sign of *infestation* should be reported immediately to the Chief of SPD, for investigation. A schedule for routine pest control treatment should be developed with Environmental Management Service.

Personal Attire



In order to protect the supplies from contamination that may be present on workers’ clothing, only hospital issued clothing is to be worn in the Clean/Sterile Storage area. In the case cart storage area, scrub suits, long sleeves, and head and beard covers are required.

The SPD uniform, consisting of white pants and a blue smock, also makes it easy to identify authorized personnel. Access to the clean/sterile storage area is limited to those with official SPD business. If it is necessary for personnel to enter the

sterile storage area wearing other clothing, they must don a cover gown or jacket.

While distributing supplies to other areas of the medical center, SPD personnel should wear the regular SPD uniform.

Environmental Cleaning

A regular schedule is set up with the Environmental Management Service for cleaning SPD. This includes daily wet mopping or vacuuming of all floors. SPD personnel are responsible for cleaning all work surfaces and sinks on a daily basis and other areas, such as storage shelves, *breakout rooms* (clean receiving), and equipment storage areas on a regularly scheduled basis. An approved disinfectant must be used.

When cleaning shelves or cabinets, you must be careful not to contaminate surrounding supplies. Remove all supplies on adjacent shelves and use caution when using disinfectant or cleaner.



Spray cleaners should not be used because of the danger of contamination.

Environmental Controls

In order to maintain sterility, environmental conditions in SPD must be carefully controlled.

Temperature	The room temperature in all SPD areas is to be kept between 65 degrees and 72 degrees Fahrenheit.
Humidity	Humidity levels should remain between 35 and 75 percent.
Air Exchanges	10 air exchanges per hour are required.

In addition to these requirements, the circulation of people, air, and work must be directed so that harmful microorganisms do not enter the clean/sterile area.

Air Flow

Clean/sterile areas of SPD are maintained under positive air flow. This means that a greater amount of air is forced into a room than is exhausted. This forces the air to seep out through other avenues such as doors, service windows, and other cracks and crevices. This flow of air from clean to dirty lessens the chance that air-borne contamination will enter the clean/sterile area.



Doors must be kept closed to maintain positive pressure.

People flow

Traffic in SPD should be restricted to authorized personnel. Only those having official business in SPD should be allowed access, and they should be accompanied by an SPD supervisor or designee. This helps minimize the microorganisms that enter on people and their clothing. Traffic patterns must be designed so that people move from clean areas to dirty areas. If a task requires someone to move from a dirty area into a clean one, proper aseptic procedures must be followed.

Work Flow

Work flow refers to the order in which medical/surgical items are received into SPD, processed, and dispensed for patient use. Work flow in SPD should always move from dirty to clean.

- Soiled instruments and patient care equipment are received in the decontamination area.
- After being processed, they move to the preparation area for inspecting, packaging, and sterilizing, as necessary. Reusable devices that do not require sterilization go directly from decontamination to the clean/sterile storage area.
- They are then transferred to the sterile storage area and maintained until issued.

Purchased medical supplies are received into SPD in a breakout area where they are removed from their outer shipping containers before being stored in the sterile area. Sterile supplies should never enter or be stored in the decontamination area; contaminated items should never enter SPD through the clean areas. Separation of clean and dirty must always be maintained.

Proper Handling

Environmental controls are not the only factors that impact the medical supplies and equipment that SPD provides medical center clients. How a product is handled and stored can greatly affect its useability.

When supplies are received in the receiving or breakout area, the shipping containers must be examined for damage. If a box is torn, crushed, or stained, the contents should be examined for damage or contamination. Any questionable condition must be brought to the attention of the SPD Chief. Damaged products can often be returned to the manufacturer for credit or replacement.

Before any item is moved into the clean/sterile storage area, it must be removed from its outer shipping container or corrugated box. These containers have been exposed to dusty, dirty conditions and may act as microbial harbors for a variety of organisms. Shipping containers and corrugated boxes must never be used as dispenser bins or storage containers. SPD personnel should wear a cover gown over their uniform while breaking out items from shipping containers. The dirty gown must be removed before returning to the clean/sterile storage area.

Clean/sterile items should be transported so that they are not bent or compressed. When delivering items, aseptic techniques should be followed. Items should not be carried under the arm or chin or in the teeth. Smaller items should be transported in a bag, larger items on solid bottomed carts that are closed or covered with an impervious cover.

All supplies should be handled with extreme care to preserve package integrity and prevent contamination. Staples, paper clips, tape, or rubber bands must never be used because they promote contamination. Storage shelves should be organized so that supplies are easy to access. Avoid overcrowding.

Inventory Rotation

Stock rotation is important in reducing the number of outdated supplies and the costs associated with discarding and reprocessing medical supplies. The acronym "FIFO" or "First In, First Out" is used to describe the practice of rotating stock to ensure that older supplies are used up first, before newer items. Supplies on the shelf

are pulled first from the top right, front and new supplies are stocked beginning on the left, back, and bottom. Once a week and prior to being issued, all sterile medical supplies must be checked for outdates. Outdated supplies are those whose expiration date has been passed. These items are no longer considered safe for use. Outdated sterile supplies should be returned to SPD for reprocessing, if they are reusable. If they are disposable, they may be returned to the supplier for a credit.

Storage Systems

There are two basic types of storage systems. Most medical centers have a variety of styles of each type. Regardless of the type of shelving used, they must all be wiped down and cleaned with a hospital approved disinfectant on a regular basis.

Open Shelving

Open shelving usually consists of wire shelves with movable dividers that are used to separate products. Open shelving is the most common type of storage unit and offers the most efficient use of space. It also makes it easy to locate supplies. One disadvantage of open shelving is that the supplies are not protected from environmental hazards and supplies are more susceptible to unauthorized removal.



Closed Shelving

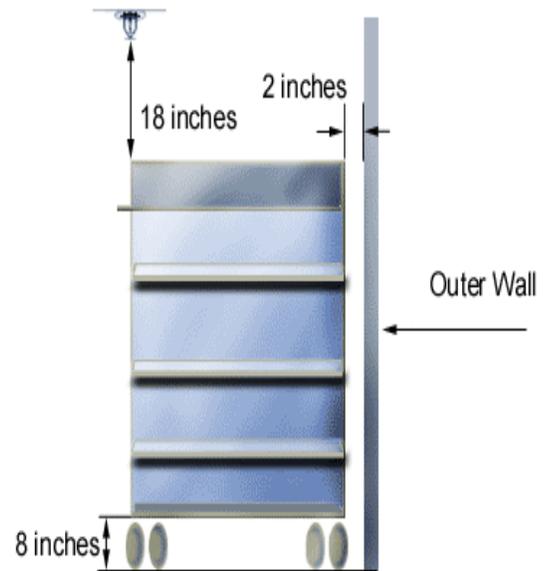
Closed shelving includes metal cabinets and portable lockers, such as exchange carts. In a closed system, there is limited air circulation, which lessens the opportunity for contamination. Unauthorized access may be discouraged since the contents are not visible. There are some drawbacks to closed systems. They may take up more space because they are bulkier, and additional



clearance is required for opening the doors. Opening and closing the doors quickly may catch supplies, causing damage. Doors should be opened slowly to avoid creating a rush of air (the “bellows” effect) which could force airborne microorganisms into the packaging. Since supplies are not visible, they may be harder to locate or access in a hurry.

All shelving must adhere to prescribed clearances from walls, floors, and ceilings (including lights and sprinklers).

- 2 inches should be maintained between sterile supplies and outer walls due to the possibility of condensation
- 18 inches between supplies and ceilings and ceiling fixtures to prevent interference with light and sprinkler operation
- At least 8 inches off the floor to prevent contamination from wet mopping



All shelving must have a solid bottom shelf to prevent dust, dirt, and water from being conveyed onto supplies located on the bottom shelf.



Space saver shelving is not recommended in any SPD area. It provides limited access for pulling or stocking supplies and may restrict access to supplies in an emergency.

Keeping Track of Stored Items

Periodically, inventories must be taken of the supplies that are stored in SPD. This helps to ensure that the right amount of each item is available and ready for use when needed for patient care. Module 9, Inventory Management, covers this process in detail.

Supplies are ordered, maintained and dispensed using a computer system that allows accurate, real-time monitoring, automatic ordering, and efficient billing.

SPD technicians are responsible for accurately recording items taken in and distributed to users, rotating inventory to avoid outdates, and pulling any items that have reached the end of their shelf life.

Did you know?

There is no real distinction between sterile and clean storage areas; all medical supplies should be stored under the same conditions. This makes it easier to locate all like items in the same area, and ensures that all patient care supplies are equally protected from contamination.

Summary

The clean/sterile storage area of SPD is designed with environmental and procedural controls that aid efforts to maintain the sterility of all products. The setup of the clean/sterile storage area should allow supplies to be located and dispensed quickly and accurately. When patient care items are needed right away, precious time should not be wasted searching up and down aisles for the correct product.

The clean/sterile storage area must be:

- Secure from unauthorized access
- Separated from public or traffic areas
- Environmentally controlled in terms of temperature, humidity, and air exchange
- Large enough to provide adequate storage
- Organized to provide fast, efficient access to needed supplies

✓ Check What You Know

1. Why is a Clean/Sterile Storage area necessary?
 - a. To protect workers from the danger of cross contamination
 - b. Because Pharmacy won't store the items
 - c. To protect supplies from contamination until they are needed
 - d. So non sterile supplies can be separated from sterile ones

2. How should outdated supplies be handled?
 - a. Treat them as if they were contaminated
 - b. Remove from storage and reprocess or return to supplier
 - c. Move them to the front so they will be used up quickly
 - d. Mark them with a permanent marker

3. Clean/sterile storage...
 - a. ensures that adequate supplies are available on a 24-hour basis.
 - b. contributes to overstocking and cost overruns.
 - c. requires environmental and procedural controls.
 - d. may inhibit timely access to critical supplies.

4. Which of the following contribute to maintaining the sterility of supplies and equipment?
 - a. Temperature control
 - b. Restricted access
 - c. Food and drink prohibited
 - d. Use of fans for adequate ventilation
 - e. Limited air exchange
 - f. Air flow under negative pressure
 - g. Reporting insect infestations

5. Which of the following is not prohibited in the clean/sterile storage area of SPD?
- a. Chewing gum or eating breath mints
 - b. Carbonated beverages
 - c. Wearing lipstick
 - d. Candy bars or snacks

6. What is the proper personal attire for SPD personnel while distributing supplies to the wards?

7. What temperature should be maintained in SPD? _____

8. What humidity level is required in SPD? _____

9. Indicate the direction of flow in SPD.
- | | | |
|----------------|----------------|----------------|
| a. People flow | clean-to-dirty | dirty-to-clean |
| b. Work flow | clean-to-dirty | dirty-to-clean |
| c. Air flow | clean-to-dirty | dirty-to-clean |

10. How many air exchanges per hour are required in sterile processing and storage?

11. Shipping containers and corrugated cardboard boxes should:
- Never be brought into SPD
 - Can be used as dispenser bins if they are clean and in good condition
 - Are not permitted in the sterile storage area
 - May harbor microorganisms

12. Where would you place new supplies when stocking this shelf?



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13. Place an "O" or a "C" next to each statement to indicate whether it describes **Open** or **Closed** shelving.
- Most common
 - Restricted air flow
 - Easy to locate supplies
 - Supplies aren't protected
 - High pilferage rate
 - More secure
 - Bulky, may reduce available space
 - Possible supply damage from doors
 - Harder to locate what is needed

Terminology

The following terms were used in this module.

air flow	The circulation of air particles within a confined space (such as the SPD department)
breakout room	An area established for unloading and unpacking medical supplies (also known as Receiving)
disinfectant	Chemical agents used in cleaning that inhibit/destroy the growth of pathogenic microorganisms. They may have little or no effect on bacterial spores
infestation	The presence or inhabitation of an area by a large number of organisms (in this case vermin or pests)
inventory loss	Supplies that are unusable (and represent an unrecoverable cost) due to damage, outdating, or theft
outdates	Supplies whose “use by” date has expired
people flow	The movement of individuals in the course of doing their assigned tasks
scrubs	A set of solid-color, loose-fitting cotton clothing worn by hospital personnel (the name comes from the fact that doctors don them prior to scrubbing for a procedure)
work flow	The movement of supplies as they are processed in SPD (from dirty to clean)